

ORGANIC CHEMISTRY - I

3. CARBONYL COMPOUNDS

PREVIOUS EAMCET BITS

1. What are the X and Y in the following reaction sequence : $C_2H_5OH \xrightarrow{Cl_2} X \xrightarrow{Cl_2} Y$

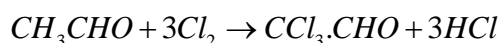
(2009 E)

- | | |
|------------------------|-------------------------|
| 1) C_2H_5OH, CH_3CHO | 2) CH_3CHO, CH_3CO_2H |
| 3) CH_3CHO, CCl_3CHO | 4) C_2H_5Cl, CCl_3CHO |

Ans : 3

Sol: Reaction $CH_3CH_2OH + Cl_2 \rightarrow CH_3CHO + 2HCl$

X



Y

2. The synthesis of crotonaldehyde from acetaldehyde is an example of reaction

(2009 E)

- | | |
|---------------------------|--|
| 1) Nucleophilic addition | 2) Elimination |
| 3) Electrophilic addition | 4) Nucleophilic addition - elimination |

Ans : 4

Sol: Reactions:



Aldol

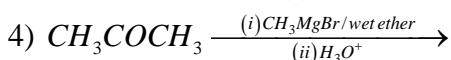
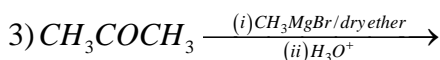
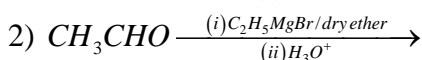
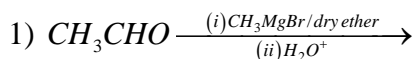


OH

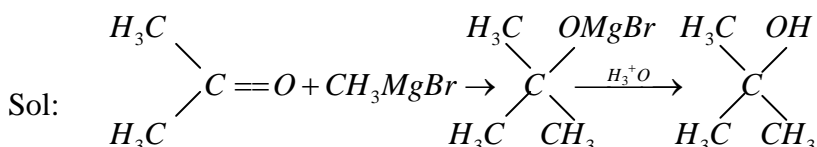
Crotonaldehyde

3. In which of the following reactions, the final product is 2-methyl-2-propanol ?

(2009 M)

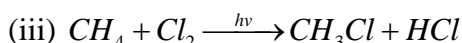
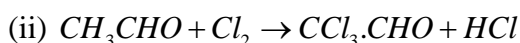
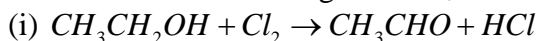


Ans : 3



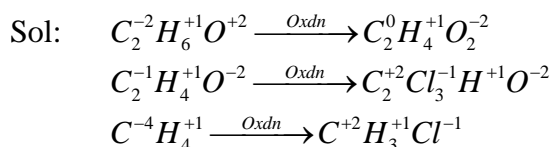
2 - methyl-2-propanol

4. In which of the following reaction, chlorine acts as an oxidizing agent ? (2008 E)



- | | | | |
|-------------|--------------|------------------|------------------------|
| 1) (i) only | 2) (ii) only | 3) (i) and (iii) | 4) (i), (ii) and (iii) |
|-------------|--------------|------------------|------------------------|

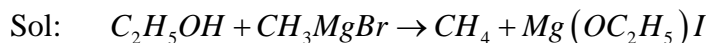
Ans : 4



5. The compound that reacts with CH_3MgBr to yield methane as one of the products is
(2008 M)

- 1) CH_3CHO 2) CH_3COCH_3 3) CH_3COOCH_3 4) CH_3CH_2OH

Ans : 4

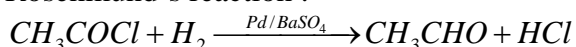


6. Which one of the following reactions is called Rosenmund reaction ? **(2007 M)**

- 1) Aldehydes are reduced to alcohols 2) Acids are converted to acid chlorides
 3) Alcohols are reduced to hydrocarbons
 4) Acid chlorides are reduced to aldehydes

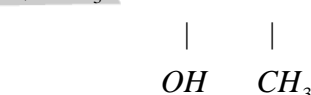
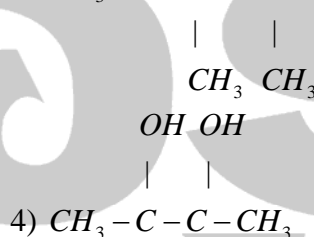
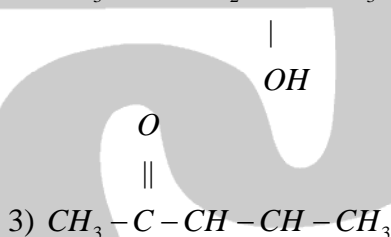
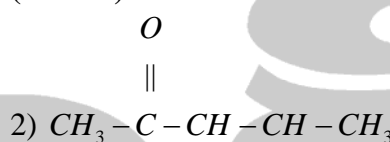
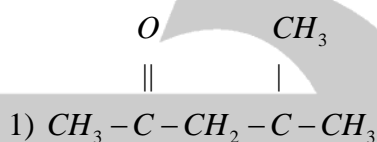
Ans : 4

Sol: Rosenmund's reaction :



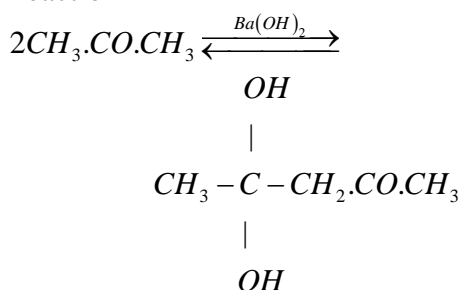
7. Which of the products is formed when acetone is reacted with barium hydroxide solution ?

(2006 E)



Ans : 1

Sol: Reaction



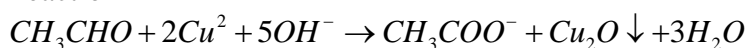
8. When acetaldehyde is heated with Fehling solution, a red precipitate is formed. Which of the following is that

(2006 E)

- 1) Cu_2O 2) Cu 3) CuO 4) $CuSO_4$

Ans : 1

Sol: Reaction



9. Which of the following compounds can give iodoform test ? **(2006 M)**

- 1) Formaldehyde 2) Acetaldehyde 3) Diethyl ketone 4) Diethyl ether

Ans : 2

Sol: Reaction

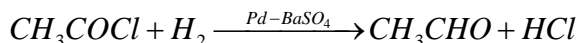


10. What reagent is used in the Rosenmund reduction ? (2006 M)

- 1) $H_2 | Pd - BaSO_4$ 2) $LiAlH_4$
 $CH_2 - OH$
 3) $NH_2NH_2 | KOH ||$ 4) $Zn - Hg | HCl$
 $CH_2 - OH$

Ans : 1

Sol: Rosenmund reduction

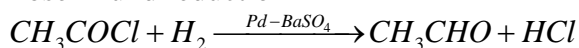


11. Which of the following compounds is the reactant in Rosenmund's reaction? (2005 E)

- 1) CH_3CO_2H 2) CH_2CHO 3) CH_3CH_2Cl 4) CH_3COCl

Ans : 4

Sol: Rosenmund reduction



12. In the reaction, $C_2H_5OH \xrightarrow[300^\circ C]{Cu} X$?

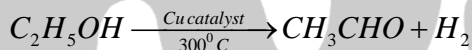
(Vapour)

The molecular formula of X is :

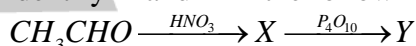
- 1) C_2H_6O 2) $C_4H_{10}O$ 3) C_2H_4O 4) C_2H_6

Ans : 3

Sol: Reaction



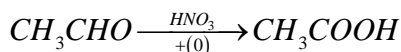
13. Identify X and Y in the following sequence of reactions (2005 M)



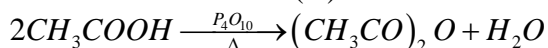
- | | X | Y |
|----|-------------|----------------|
| 1) | C_2H_5OH | C_2H_4 |
| 2) | CH_3CO_2H | $(CH_3CO)_2O$ |
| 3) | CH_3CO_2H | $CH_3CO_2CH_3$ |
| 4) | C_2H_5OH | CH_3CO_2H |

Ans : 2

Sol: Reaction



(X)



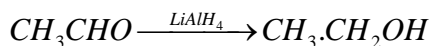
(Y)

14. A compound X undergoes reduction with $LiAlH_4$ to yield Y. When vapours of Y are passed over freshly reduced copper at $300^\circ C$, X is formed. What is Y ? (2005 M)

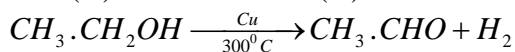
- 1) CH_3COCH_3 2) CH_3CHO 3) CH_3CH_2OH 4) $CH_3 - O - CH_3$

Ans : 3

Sol: Reaction



(X) (Y)



(Y) (X)

15. Identify 'actaldoxime' (2004 E)
- 1) $CH_3CH = N - NH_2$ 2) $CH_3CH = N - OH$
 3) $(CH_3)_2C = N - OH$ 4) $CH_2 = N - OH$

Ans : 2

Sol: Acetaldoxime structure $CH_3CH = N - OH$

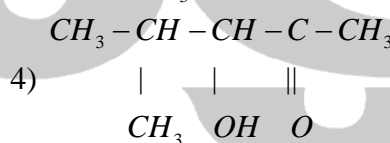
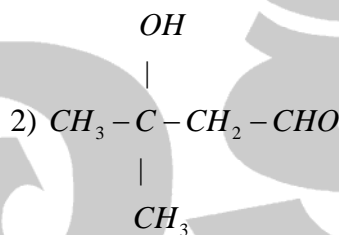
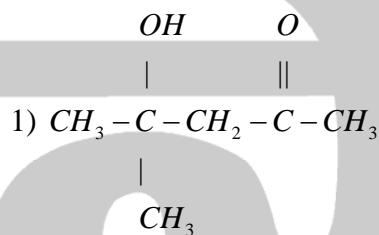
16. The product formed in the aldol condensation of acetaldehyde (2004 M)
- 1) $CH_2CH_2CH(OH)CHO$ 2) $CH_2CH(OH)CH_2CHO$
 3) $CH_3CH(OH)COCH_3$ 4) $CH_3CH_2CH_2CHO$

Ans : 2

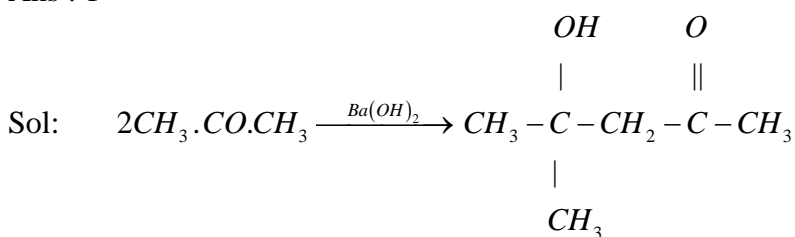
Sol: Aldol condensation of acetaldehyde reaction.



17. What is X in the following reaction $2CH_3COCH_3 \xrightarrow{Ba(OH)_2} x$ (2002 E)



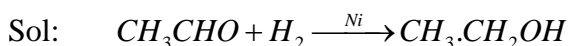
Ans : 1



Diacetone alcohol

18. Acetaldehyde is reduced with hydrogen in the presence of nickel. What is the compound formed (2002 M)
- 1) Ethanol 2) n-propanol 3) Methanol 4) Isopropanol

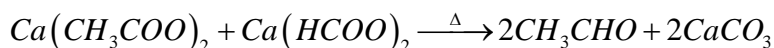
Ans : 1



19. Dry distillation of a mixture calcium acetate and calcium formate forms... (2001 E)
- 1) Methanol 2) Ethanal 3) Ethanol 4) Acetone

Ans : 2

Sol: Dry distillation of Calcium acetate and Calcium formate gives acetaldehyde.

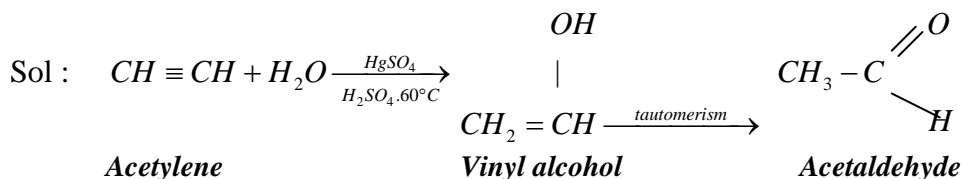


20. In the following reaction $C_2H_2 \xrightarrow[HgSO_4/H_2SO_4, 60^\circ C]{H_2O} \underline{X} \rightleftharpoons CH_3CHO$. What is X?

(2001 M)

- 1) CH_3CH_2OH 2) CH_3-O-CH_3 3) CH_3CH_2CHO 4) $H_2C=CHOH$

Ans : 4



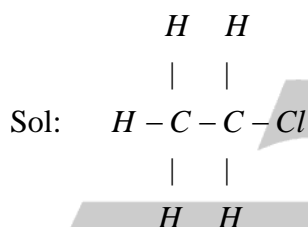
In the above reaction, intermediate compounds is $CH_2 = CHOH$

21. In chloroethane, the carbon bearing halogen is bonded to ... hydrogen (s). It is called ... alkyl halide.

(2002 E)

- 1) two, primary 2) three, primary 3) two, secondary 4) one, tertiary

Ans: 1



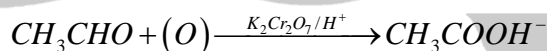
C bonded to 2 H atoms \therefore it is primary alkyl halide.

22. Ethanal is reacted with acidified $K_2Cr_2O_7$. What is the product formed ? (2001 M)

- 1) C_2H_5OH 2) CH_3COOH 3) C_2H_6 4) CCl_3CHO

Ans : 2

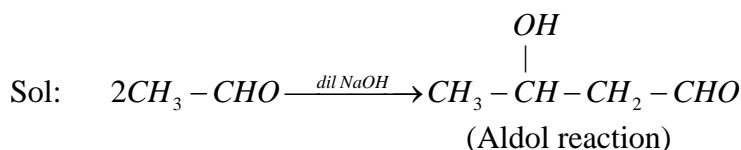
Sol: Acetaldehyde (Ethanal) undergoes oxidation to acetic acid when treated with acidified $K_2Cr_2O_7$.



23. What is X in the following reaction ? $2CH_3CHO \xrightarrow{\text{dil NaOH}} X$ (2000 E)

- 1) $\begin{array}{c} CH_3 - CH - CHO \\ | \\ O \end{array}$ 2) $\begin{array}{c} CH_3 - C - CH_2 - CHO \\ || \\ O \end{array}$
- 3) $\begin{array}{c} CH_3 - CH - CH_2 - CHO \\ | \\ OH \end{array}$ 4) $\begin{array}{c} CH_3 - CH_2 - CH - CHO \\ | \\ OH \end{array}$

Ans : 3

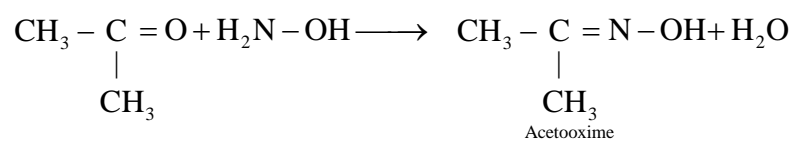


24. Which of the following converts acetone to acetone oxime ? (2000 E)

- 1) H_2N-NH_2 2) 2,4- DNP 3) $C_6H_5NHNH_2$ 4) NH_2OH

Ans : 4

Sol:



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